0084

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Dr. G. A. (Jim) Shirazi, Division Director

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

August 29, 1983

Mr. Wendell Owen
Co-op Mining Company
P.O. Box 1245
Huntington, Utah 84528

RE: Sizing of Upper Storage Pad and Coal Hard and Yard Culverts
ACT/015/025, Folder 3 & 7
Emery County, Utah

Dear Wendell,

In reviewing the sizing of the culverts that will be utilized under the upper storage pad and coal haul yard, I used the UDOT method (same as Horrock Engineers) to calculate the runoff potentially generated during a ten year event.

According to my calculations for the upper storage pad area a peak discharge of 21 c.f.s. will be generated. I used the acreage and L.F. values presented by Horrock Engineers in your submittal. I might add that I feel that the land factor is conservative, however, to give you the benefit of the doubt, I left it as is.

The following calculations and charts will demonstrate how I arrived at the values to compute the peak discharge (Qf).

$Qf = Qc \times LF \times FF$

1. From Chart 2-02, $i_2 = 0.7$ in/hr; $i_{100}/i_2 = 2.6$
2. $i_{100} = 0.7$ in/hr x 2.6 = 1.82 in/hr
3. From chart 2.03: $i_{25} = 1.37$ in/hr; $i_{10} = 1.15$ in/hr
4. Enter table 2-05 and fine K = .34
5. Enter chart 2.06 and find Qc = 25 Cfs
   Area = 21.4 acres

6. LF = 1

7. Calculate FF = i_{10}/i_{25} = 1.15 in/hr / 1.37 in/hr = 0.84

8. Calculate Q_{10} = 25 cfs x 1.0 x 0.84 = 21 cfs

9. Projecting a heawater depth from chart 2-53 would yield a headwater of 65 inches above this culvert to transmit a Q of 21 cfs.

This headwater value excessive and not acceptable to the Division. It is recommended that the operator install a 30 inch culvert to transmit the disturbed discharge under the upper storage pad and install another 18 inch or larger culvert parallel, to the existing 18 inch culvert and use an embankment with a headwater of at least five inches above the culverts.

It is regretful that previous calculations were approved by the Divison, however, prior approval does not relieve the operator of the obligation to adhere to the established regulation.

If there is further information that can justify the sizing of the 18 inch culvert please feel free to contact me.

Sincerely,

David W. Darby

DAVID W. DARBY
RECLAMATION HYDROLOGIST

DWD/jvb

cc: H. Lee Wimmer, Horrock Engineers
J. Whitehead, DOGM
R. Summers, DOGM
J. Helfrich, DOGM